

REMARKS

Reconsideration of this application in light of the above amendments and following comments is courteously solicited.

Claims 1, 2, 8 and 9 have been cancelled. Applicant has amended claims 3-7 and added new claims 10-18. These amendments have been made in response to the Examiner's rejection of previously submitted claims 1-9 under 35 U.S.C. 112. It is believed that these claims comply with the formal requirements of 35 U.S.C. 112, both first and second paragraphs and patentably define over the art of record.

The present invention comprises two species which are forming the junction and protection membrane on the planar reference electrode of the present invention. The first species as shown in Figure 1 is characterized in that the junction 7 is formed in a line of microcapillary and the protection membrane 8 is formed of non porous material. Newly presented independent claims 16 and 17 are drawn to the electrode per se in the method of fabricating the same, respectively, read on this first species of Figure 1. As can be seen with reference to new independent claim 16, the junction is formed in a line of microcapillary. This particular feature is disclosed, for example, on Page 13 lines 5-11 of the instant application. Independent method claim 17 includes the step of providing a well around the electrode and a line of microcapillary. The

prior art cited by the Examiner does not teach, disclose, suggest or render obvious this particular feature as set forth above and claimed in independent claims 16 and 17.

The second species, the species set forth in Figure 2, is covered by independent claims 10 and 18 respectively. Claims 10 and 18 set forth that the porous polymer membrane functions as both a junction and a protection membrane and the plate and the porous polymer membrane are formed of different materials. Disclosure for this is seen, for example, on Page 12, line 23 through Page 13 line 3. It is respectfully submitted that the features of independent claims 10 and 18 are not shown by the prior art.

The Examiner in his office action states that U.S. Patent 4,002,547 discloses "a housing 12 itself serving as a junction device" as can be seen from Figure 1 of the '547 patent, the patent discloses a reference electrode comprising an electrode body of liquid and permeable polymeric material, the electrobody forming a closed internal chamber. Again see Figure 1 and, for example, claim 1 of the '547 patent to Neti et al.

However, Neti et al. are not related to a planar reference electrode. Thus, Neti et al. do not disclose "the combination of plate, insulating membrane, and porous polymer membrane" of the present invention, but "one body of liquid impermeable polymeric material". In addition, Neti et al. do not disclose

"the plate and the porous polymer membrane formed of different material". Finally, liquid impermeable polymeric material of Neti et al. is polytetrafluoroethylene, while porous polymer membrane of the present invention is cellulose nitrate.

In light of the foregoing, it is submitted that the claims as presently pending patentably define over the Neti et al. '547 patent.

In addition to the foregoing, it should be noted that the neither Kotani '166 nor Kater et al. '899 teach, disclose or render obvious the features noted above with regard to the new independent claims submitted herewith. The same is true with respect to the remaining prior art documents cited by the Examiner.

In light of the foregoing it is submitted that all of the claims as currently pending patentably define over the art of record and an early indication of same was respectfully requested.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and

the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,

GEUN SIG CHA ET AL.

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Date: December 23, 2002

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Version with markings to show changes made to claims

3. (Amended) The planar reference electrode as set forth in claim [1] 16, wherein the plate [(4)] is selected from the group consisting of alumina, glass and plastic substance.

4. (Amended) The planar reference electrode as set forth in claim [1] 16, wherein the electrode [(3)] is selected from the group consisting of Ag, Pd, Cu, Pt, Ag/AgCl, Ag containing 1-5 weight% of Pd and Ag coated with Nafion.

5. (Amended) The planar reference electrode as set forth in claim [1], 16 wherein the inner reference solution [(5)] is [the] an electrolyte containing hydrogel which consists of 85-99% weight% of glycerol solution; 1-19 weight% of agar solution; polymeric glue; or a soluble polymer dissolved with hygroscopic substance.

6. (Amended) The planar reference electrode as set forth in claim 5, wherein the electrolyte is AgNO₃ or perchloric acid for [the] a Ag electrode, KCl or NaCl for [the] a Ag/AgCl electrode, and KOH or NaOH for [the] a mercury/mercury oxide electrode.

7. (Amended) The planar reference electrode as set forth in claim [1] 16, wherein the non-porous protection membrane [(6, 8 or 9) is polymeric substance including polyester or porous polymer membrane] is formed by polyester.